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| EXAMINER | |
|---|---|
| MIS, DAVID C | |

| ART UNIT | PAPER NUMBER |
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| 2817 | |

DATE MAILED: 11/22/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

H-A

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/813,275 | CHIEN, HUNG-MING | |
| | Examiner | Art Unit | |
| | David Mis | 2817 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☐ Responsive to communication(s) filed on _____.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-38* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-38* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *12 September 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

1. The following is an OCR (character recognition) generated copy of Applicant's remarks filed 10/28/05. Examiner comments are inserted and distinguished by large bold type. The comments are directed to the actual remarks.

REMARKS

The Office Action dated October 7, 2005, has been received and carefully noted.

The above amendments to the specification and claims, and the following remarks, are

submitted as a 011 and complete response thereto.

Claims 33-38 have been added to more particularly point out and distinctly claim

the invention. These claims are supported by, for example, Figure 2, paragraphs 0028

and 0031, and original claim 1 .

Accordingly, these amendments do not add any new

subject matter.

Claims 1-38 are currently pending in the application, of which claims 1, 10, 19, 24, 28, 31-32, and 38 are independent. In view of the above amendments and the

following remarks, Applicant respectfully submits claims 1-38 for consideration.

Rejections under 35 U.S.C. 102(b) <<<<<<<<<<<<<<<<<<

Claims 1-10, 12-14, and 16-32 were again rejected under 35 U.S.C. 102(b) as

anticipated by U.S. 6,166,670 of O'Shaughnessy (çso'shaughnessy"). Applicant

|upon which claims 2-9 depend, is directed to a noise

|reduction circuit.

respectfully traverses this rejection.

**BEGIN SUMMARY OF INDEPENDENT CLAIMS**

Independent claim 1,

The noise reduction circuit may include a tslter coupled to a gate of a current source for an oscillating circuit to ûlter a bias noise component into the gate. The

noise reduction circuit may also include a degeneration circuit coupled to a supply for the

current source, wherein the degeneration circuit reduces a gain within the current source.

Independent claim 10, upon which claims 12-14 and 16-18 depend, is directed to a system for reducing noise in an oscillating circuit. A filtering device having a first resistance and a capacitance to filter a bias current and coupled to a gate of a current source. The system may also include a degeneration device having a second resistance to reduce a noise component in a supply current at the current source.

Independent claim 19, upon which claims 20-23 depend, is directed to a method for reducing noise. The method may include filtering a bias'noise component from a bias current flowing into a gate of a current source for an oscillating circuit. The method may also include reducing a supply noise component from a supply current flowing into a supply of the current source.

Independent claim 24, upon which claims 25-27 depend, is directed to a method

for reducing noise components. The method

may include reducing a bias noise

component by passing a bias current through a noise reduction circuit

coupled to a gate of

a current source to an oscillating circuit. The method may also include

reducing a supply

noise component by passing a supply current through the noise reduction

circuit coupled

to a supply of the current source.

Independent claim 28, upon which claims 29-30 depend, is

directed to a circuit

The circuit may also

that may include an oscillating circuit to generate an output signal.

include a current source to control the oscillating circuit. The current source

may receive

a signal derived from a reference signal to generate the output signal.

The circuit may

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also include a noise reduction circuit coupled to a gate and a supply of the

current source

to reduce a noise component within the signal.

Independent claim 31 is directed to a circuit for reducing noise. The circuit may include filtering means for filtering a bias noise component from a bias current tlowing into a gate of a current source for an oscillating circuit. The circuit may also include reducing means for reducing a supply noise component from a supply current flowing into a supply of the current source.

Independent claim 32 is directed to a circuit for reducing noise components. The circuit may include first reducing means for reducing a bias noise component by passing a bias current through a noise reduction circuit coupled to a gate of a current source to an oscillating circuit.

The circuit may also include second reducing means for reducing a supply noise component by passing a supply current though the noise reduction circuit coupled to a supply of the current source.

## END SUMMARY OF INDEPENDENT CLAIMS

It is respectfully submitted that the cited art of O'Shaugnessy fails to disclose or

suggest all the elements of any of the presently pending claims.

O'Shaugnessy is directed to a self-calibrating current mirror and digital to analog

converter. O'Shaugnessy, in Figure 3, describes a current mirror that may serve as a

circuit that reduces the error due to device mismatch under certain conditions. The

source of input current 3 18

is connected to the gates of three transistors (310N312,

320N322A, and 3208/3228). The transistors are arranged in order to provide a current

---

mirror that reduces error due to device mismatch. O'Shaugnessy labels Figure 3, which

contains the above-described circuit, as prior art.

Claim 1 recites tça filter coupled to

a gate of a current source for an oscillating

circuit to tslter a bias noise component into the gate."

O'Shaugnessy does not teach or

suggest this element.

circuit serves as a filter, and any

O'Shaugnessy does not teach that any element of its described

structurally similar feature

(such as O'Shaugnessy's

capacitor 380) is not taught as being appropriately selected to ûlter noise, as

noise is not a

described or taught portion of O'Shaugnessy's circuit, as explained above

**[Above, Applicant described some things that O'Shaughnessy taught and alleged that O'Shaughnessy did not teach filtering noise, but did not *explain* that O'Shaughnessy did not teach filtering noise.]** . Additionally,

one of ordinary skill in the art would know that the value selected for a

capacitor depends

on the function that the capacitor serves **[agreed]**. There is

capacitor is of an appropriate value to effectively filter noise, nor would one

of the

ordinary skill in the art select a capacitor with noise filtering in mind,

because noise

no indication that O'Shaugnessy's

filtering is not suggested or disclosed in O'Shaugnessy.

**[O'Shaughnessy does not explain capacitor 380 of his figure 3 at all. Its function is clearly expected to be understood. One of ordinary skill in the art must at least put a capacitor in and not know what it does. It is within ordinary skill in the art to deduce what the capacitor does. Given that it separates the supply voltage and the current mirror voltage and acts as a capacitor, one of ordinary skill in the art must have understood that certain high frequency signals would be damped. It is an elementary deduction. It is not necessary that one knew what signals were damped to have understood the filter function. One of ordinary skill would not have dropped in a random capacitor. It is thus necessary that one of ordinary skill in the art measured the voltage changes between the power supply voltage and current mirror voltage in view of the existence of the capacitor and his understanding of how a capacitor works, to determine a capacitor value he judged as optimal. Everyone is capable of deduction, and the**

**above is elementary. Ideally both the power supply voltage and the current mirror voltage are perfectly stable. Any rapid variation was some kind of noise. One of ordinary skill in the art thus must have designed a filter]**.

Assuming for the moment
that O'Shaugnessy provided a
filter (not admitted),
O'Shaugnessy's filter is not taught as
connected to an
oscillating circuit. Indeed,
O'Shaugnessy does not **[explicitly]** teach or suggest **[it is suggested inter alia]** connecting the circuit to any actual output **[elementary deduction that it was connected to something]**,
because, as O'Shaugnessy puts it, the ççcircuit of FIG. 3 provides improved matching **["provides improved matching" is an explicit statement that the circuit had utility]** only
over a limited range of current.
If the current is too small, the circuit becomes sensitive
to device mismatches.
When current is too large, insufncient supply voltage exists to

drive the output load." Col. 5.

11. 32-37. Thus, although O'Shaugnessy mentions that

current mirrors can be used with balanced modulators, O'Shaugnessy does

not suggest

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combining the circuit of Figure 3 with a balanced modulator **[Since O'Shaughnessy said that prior art current mirrors were used at least in balanced modulators and that the figure 3 circuit was a prior art current mirror, O'Shaughnessy thus suggested that the figure 3 circuit was at least for a balanced modulator]**.

Rather the cited portion

regarding balanced modulators relates to a general description **["In general, a current mirror is... .(period)" The "period" ended the "general" part. "The current mirror is used in ... balanced modulators ..." is what was explicitly said.]**, as can

be seen at Col. 1,

11. 29-35 (ûlln general . ..."). Accordingly, O'Shaugnessy fails to teach or

suggest at least

these features of claim 1.

The Office Action states that O'Shaugnessy ççimplied the connection of the Fig. 3

circuit to an actual output." Applicant respectfully disagrees. Items 328A and 3288 are

hypothetical outputs. Any implication that those hypothetical outputs should correspond

to actual circuits is overcome by O'Shaugnessy's criticism of the circuit, namely that its

improved accuracy ççoccurs with certain disadvantages and limitations."

**[One can criticize any circuit. All circuits have characteristic optimal ranges of operation, and if one wants to, one can criticize a circuit for not operating as well outside of its optimal operating range as it operates within its optimal operating range. O'Shaughnessy did not say the figure 3 circuit was not used or unusable, and it actually must have been used to have been considered a "prior art" device since if it was not used it was not in the art. Since it was "prior art" it must have been part of the "art"; i.e. used in the art.]** Additional

negative comments with which O'Shaugnessy describes the circuit of Figure 3 provide

additional reasons that one of ordinary skill in the art would not be motivated to combine

the circuit of Figure 3 with an acttlal output.

The Oftice Action also states that O'Shaugnessy çssuggests combining the circuit

of Figure 3 with a balanced modulator BY mentioning that current mirrors can be **["can be" is a misinterpretation of the reference – "is" is the word that was specified (column 1, line 33)]**used with balanced modulators."

Mere information that current mirrors generally **["generally" is a misinterpretation of the specification – see (column 1, lines 29-35) where "generally" is only in the first sentence]** can be

combined with balanced modulators is not a suggestion to combine the criticized circuit

shown in Figure 3 with an oscillating circuit. **[It is not "mere information" since it is all in the "background" section and**

**is all thus associated conceptually.]** O'Shaugnessy does not suggest combining the circuit in Figure 3 with anything else.

Although O'Shaugnessy depicts the circuit in Figure 3, it is to display its weaknesses and shortcomings, not to encourage its use. **[In a patent, the prior art is always said to have some weakness or shortcoming that the invention solves, and use of the invention over the prior art is always encouraged. Such language is not meant to show that the prior art was not used. Rather, it is a clear indication that the inventor considered USE of the prior art less advantageous than USE of his invention. This is concrete evidence that the prior art was used.]**

Figure 3 is labeled by O'Shaugnessy as Prior Art. O'Shaugnessy states that circuit provides mismatch error that is signincantly Iess than the

---

mismatch error of the Prior Art. Additionally, O'Shaugnessy is providing circuits, not for

use in balanced modulators, but for use in

digital to analog converters (DACs). **[O'Shaughnessy invented a "Self Calibrating Current Mirror AND Digital To Analog Converter" (Title). O'Shaughnessy's background described both devices, and clearly distinguished between them. O'Shaughnessy said in column 1, lines 33-35 "The current mirror IS USED in comparators, operational amplifiers, balanced modulators and MANY OTHER circuit topologies." It is not certain which one(s) of these uses O'Shaughnessy knew employed the Fig. 3 circuit. All that is necessary is that the use be for an "oscillating circuit", and an "oscillating circuit" broadly includes any circuit that experiences an oscillation such as for example by interference, stray impedances, shock, ... i.e. every circuit.]**

O'Shaugnessy nowhere suggests using any of the current mirrors disclosed therein in

conjunction with a balanced modulator.

Accordingly, one of ordinary skill in the art

would not be motivated to combine the circuit of Figure 3 with an oscillating circuit. **[No "motivation" is necessary. O'Shaughnessy explicitly said it was "prior art". Thus it was used.]**

Independent claims 10, 19, 24, 28,

3 1, and 32 each have their own scope, as

Claims 10, 19, 24, 28, 31, and 32, however, have some similar

For example, they each recite çlan oscillating circuit," **["oscillating circuit" is not really a limitation since any circuit will experience oscillations, for example, at least from the noise spectrum.]** (Claims 10,

explained above.

recitations to claim 1.

19, 24, 28, 3 1, and 32), and a noise reduction/filtering aspect **[it was necessary that the O'Shaughnessy capacitor be designed to filter, and it is necessarily the case that noise was filtered since noise includes high frequency components.]**

(ççfiltering device" - claim

10, Gûtiltering bias noise component" - claim 19, tçnoise reduction circuit" - claim 24,

ûçnoise reduction circuit" - claim 28, tçfiltering means for Gltering bias noise" - claim 31,

tçfirst reducing means for reducing a bias noise component" - claim 32). Thus, claims 10,

19, 24, 28, 3 1, and 32 should be allowed for at least the same reasons as claim 1.

Rejections under 35 U.S.C. 103(a) <<<<<<<<<<<<<<<<<<

Claims 1-14 and 16-32 were rejected under 35 U.S.C. 103(a) as unpatentable over

O'Shaugnessy in view of U.S. Patent No. 5,909,150 of Kostelnik et al. CsKostelnik").

The Office Action takes the position that O'Shaugnessy teaches all the elements of the

claims, except as to what provided the current at the source of the input current, and that

Kostelnik disclosed that band gap bias circuits were known for this pumose. Applicant

respectfully traverses this rejection.

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Kostelnik is directed to a system and method for improving the regulation of a

supply voltage

for a controllable

oscillator using feed forward

control techniques.

Kostelnik indicates, at Col. 9, 11. 1-3 that a band gap bias circuit can be used to provide a

bias current. The bias current ibias in Kostelnik is being provided to a pair of transistors,

M5 and M6, as shown in Figure 8. **[M5 and M6 are part of a current mirror circuit within 4003.]**

Figure 8 depicts a voltage control circuit 4003 which

provides voltage to a current controlled oscillator circuit 1013 cormected at node 4005.

As discussed above **[see examiner comments above]** ,

O'Shaugnessy fails to teach or suggest several elements of

the claims of the present invention.

Kostelnik does not remedy the above-described

deficiencies of O'Shaugnessy.

O'Shaugnessy teaches away from the invention. As described above **[see examiner comments above]**,

O'Shaugnessy describes Figure 3 as prior art and describes its deficiencies.

O'Shaugnessy even goes so far as to state at

Col. 6, 11. 4-5 that the

(dcurrent mirror

structurelj disclosed in . .. FIG. 3 (has) mismatch errors."

O'Shaugnessy continues to

deprecate the embodiment shown in FIG. 3, at Col. 6, 11. 26-27 by stating

that ûûmismatch

error of current mirror circuits produces numerous adverse effects." This is

doubtless

why, as explained above **[see examiner comments above]**,

although generic output loads are depicted, O'Shaugnessy does

not suggest using the described circuit in combination with anything.

Kostelnik is not

directed to overcome the deficiencies described by O'Shaughnessy, nor is

Figure 3 of

O'Shaughnessy designed to overcome the deficiencies of Kostelnik. Thus,

one of

ordinary skill in the art would not find motivation **[the "motivation" to provide a stable bias for a current mirror is universal]**, teaching, or suggestion to combine

O'Shaugnessy with Kostelnik.

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Even if O'Shaugnessy and

Kostelnik could be combined (not admitted), the

combination would still not recite all the features recited in the claims. For example,

such a combination would not teach tça filter . . . to filter a bias noise component into the

gate" as recited by claim 1, or the similar (though different) recitations of the independent

claims (for example, ççfiltering device" - claim

10 tûfiltering bias noise component" -

ççnoise reduction circuit" - claim 28,

claim 19, tsnoise reduction circuit" - claim 24,

ûtfiltering means for filtering bias noise" **[the fact that Applicant filters bias noise does not change the filter from a design**

**that would have filtered the noise that one of ordinary skill in the art must have measured and designed it to filter – and so the limitation has no significant weight.]**- claim 31, ççfirst reducing means for reducing a bias noise component" - claim 32). O'Shaugnessy's failure to provide these elements is explained above **[see examiner comments above]**.

Kostelnik only describes filtering high frequency noise on the node 4005, which is the output (not an input) of Kostelnik's voltage control circuit. Kostelnik does not disclose or suggest filtering noise that would othemise be input to a current source for an oscillating circuit. **[The rejection was not based on Kostelnik et al for filtering.]** Accordingly, the cited art of O'Shaugnessy and Kostelnik, whether taken singly or in combination does not teach or suggest all of the elements of any of the presently pending claims.

Applicant notes that the Office Action does not respond to these arguments, but

merely asserts that the art is 111

of current mirrors having

stable reference current

SOurCeS. **[It is. All the rejection relies on is Kostelnik et al. Understanding of the art such as the noted fact was provided anyway. Lots of other art facts were not provided. Current source stability characteristics was mentioned in preference to, for example transistor temperature characteristics, because it is more pertinent. It provides background.]**

Claims 1- 10 and 12-32 were rejected under 35 U.S.C. 103(a) as being unpatentable over O'Shaugnessy in view of U.S. Patent No. 6,803,829 of Duncan et al.

($ûDuncan"). Applicant respectfully traverses this rejection.

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Duncan is directed to an integrated VCO having an improved tuning range over

WOCCSS and temperature Variations.

In particular, Duncan relates to an integrated VCO

that includes, in some embodiments, a substrate, a VCO tuning control circuit responsive to a VCO state variable that is disposed upon the substrate, and a VCO disposed upon the substrate, having a tuning control voltage input falling within a VCO tuning range for adjusting a VCO frequency output, and having its tuning range adjusted by the tuning control circuit in response to the VCO state variable.

It is respectfully submitted that Duncan is not prior art, at least insofar as it is cited in the Office Action **[The present application "10/813,275" has a filing date of 03/31/2004 and is not a continuation and does not have a claim to priority. Duncan et al was filed on 06/17/2002, more than one year before the present application, and first published as US2003/0030497 on 02/13/2003, more than one year before the present application. Duncan et al is also a continuation of 09/580,014 filed May 26, 2000.]** Duncan was filed June 17, 2002, and claims priority through three

continuations-in-part

to Application No. 09/439,101 filed November 12, 1999, (ç 101

application) and also to provisional Application No. 60/136,1 16 filed May 26, 1999 (t 1 16

application). The cited figure 451, however, is not shown, at least in the t 101 application

(which claims priority to the t 1 16 application). Accordingly, Figure 451 should not be

considered as prior art. Additionally, even if it were to be considered as prior art as of

November 12, 1999, Duncan was owned by or subject to obligation of assignment to the

same entity as the present application at the time of the invention,

namely Broadcom

Corporation. Because the effective filing date of the present application is June 29, 2000, **[The earliest filing date of the present application is 03/31/2004.]**

Duncan would only be

a reference (based on the t 101 application) under 35 U.S.C.

102(e). However, 35 U.S.C. 103(c) statutorily eliminates such references from consideration under 35 U.S.C. 103(a).

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As discussed above **[see examiner comments above]**, O'Shaugnessy fails to teach or suggest at least some of the elements of each of the claims of the present invention. Duncan does not remedy the above-described deficiencies of O'Shaugnessy. O'Shaugnessy teaches away from the invention. As described above, O'Shaugnessy describes Figure 3 as prior art and describes its deficiencies. O'Shaugnessy even goes so far as to state at Col. 6, 11. 4-5 that the çlcurrent mirror structurel) disclosed in .. . FIG. 3 (hasq mismatch errors." O'Shaugnessy continues to deprecate the embodiment shown in FIG. 3, at Col. 6, 11. 26-27 by stating that ççmismatch error of current mirror circuits produces numerous adverse effects." This is doubtless why, as explained above **[see examiner comments above]**, although generic output loads are depicted, O'Shaugnessy does

not suggest using the described circuit in combination with anything. Duncan is not

directed to overcome the deficiencies described by O'Shaughnessy, nor is Figure 3 of

O'Shaughnessy designed to overcome the deficiencies of Duncan.

Thus, one of ordinary

suggestion to combine

skill in the art would not tsnd motivation, teaching, or

O'Shaugnessy with Duncu.

Rejections under 35 U.S.C. 102(a) <<<<<<<<<<<<<<<<<<<

Claims 1-4, 6-10, 12-17, and 19-32 were rejected under 35 U.S.C. 102(a) as being

anticipated by Enriquez.

Applicant respectfully traverses this rejection.

a current mirror with an embedded

losv-pass slter for

Enriquez relates to

subscriber line interface circuit applications. Emiquez's low pass tslter is not designed to

filter noise. **[The Title is "Current Mirror-Embedded Low-Pass Filter for Subscriber Line Interface Circuit Applications" and it is said (column 2, lines 1-3, "As pointed out above, among the performance requirements of present day SLICs is the need to provide (low pass) filtering." And "above" includes "... present day SLICs must conform with a very demanding set of performance requirements, indluding ... low noise, ... filtering, ...". Enriquez thus explicitly taught to design for "filtering" in a "low noise" way because filtering and low noise were said to be "requirements". Any "filtering" that an Enriquez current mirror was designed for was constrained by the "low noise" requirement. Thus any "noise" in the transistor "21" base bias / signal line was necessarily minimized]**.

Enriquez includes a low pass filter is to modify the transfer function of the current mirror so that the output current is equal to the frequency content of the input

current below the cut-off frequency as defined by the time constant of the RC filter. The

purpose of doing this is stated as ççto lower the voltage supply rail bar . . .

from five volts

down to . . . three volts-" **[This is not the only purpose.]**

The various limitations of the claims are discussed above. Each of the claims

includes some element that is configured to

effectively filter noise. As with

O'Shaugnessy, nothing

in Enriquez is designed to filter noise. Enriquez, like

O'Shaugnessy does not even mention noise. **[column 1, lines 12 and 25]**

The Office Action takes the position that if the circuit actually filters noise, it

does

not matter **[with respect to the claim language]** whether that

characteristic is disclosed. It is respectfully noted that although

Emiquez mentions a number of performance requirements such as çslow

noise" but also

ûûlow power consumption " tçaccuracy," çtlinearity " ççfiltering " and ççease

of impedance

matching" to name a few. Enriquez circuit, however, is designed, not to meet every one of those requirements **[Given the Enriquez statement "... SLICs MUST conform ... with performance REQUIREMENTS ...", it is clear that Enriquez did design to meet all possible requirements.]**, but rather to ççnot only reducel) implementation complexity, but also readily complly) with reduced power supply parameters of the SL1C." **[These are additional features of the Enriquez invention.]**

The Office Action does not consider that filtering noise requires more than merely including a low pass filter into the circuit. **[Filtering noise only requires filtering noise. Any noise.]**

For example, if a low pass filter is designed to pass frequencies below 40,000 Kllz, but frequencies greater than 60 Hz are considered noise, such a low-pass filter does not effectively reduce noise. **[If the Enriquez filter filtered out frequencies above a particular signal frequency, then the noise spectrum above this range**

**was necessarily filtered, and deliberately filtered in accordance with the Enriquez noise teaching. Lower frequency noise in the signal frequency range that would not have been filtered is present in any signal range in any circuit and obviously can not be filtered without losing the signal.]**

The frequencies provided

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are merely by way of illustrating the difference between filtering generally and reducing

noise specifically, they are not limitations of the present invention.

Enriquez, however, does not teach or suggest filtering noise. **[see examiner comments above]**

Enriquez discloses

lowering a voltage using an LPF. **[for low overhead applications]**

Accordingly, Enriquez does not teach or suggest at

least those elements related to iltering noise. **[see examiner comments above]**

Additionally, each of the claims recites an oscillating circuit. **[Every single circuit in existence is an "oscillating circuit" since they all experience at least some oscillation.]**

Emiquez is directed

to a circuit that can be used in communication systems and components.

The disclosure

that the circuit relates to çtcommunication systems and components" is not a teaching or

suggestion to connect the circuit to every kind of communication system or component.

It is not even a teaching or suggestion to connect the circuit to any particular kind of

communication system or component.

The only particular communication component

for which the circuit is identified as useful is a subscriber line interface circuit (SLIC). **[see column 3, lines 4-9, " ... a variety ...]** A SLIC, however, is not an oscillating circuit. **[A SLIC is not an oscillator, a SLIC is not even an oscillator circuit, but a SLIC is certainly an oscillating circuit.]**

Accordingly, Enriquez does not teach or

suggest at least this element of the claimed invention.

Additional rejections under 103(a) **<<<<<<<<<<<<<<<<**

Claims 1-10 and 12-32 were rejected, in the altemative, under 35 U.S.C. 103(a) as

being unpatentable over Emiquez.

Some of the differences between Emiquez and the claimed invention are discussed

above. **[see examiner comments above]** Two areas

that Erïriquez does not teach or suggest is

filtering noise, and

---

providing a current supply for an oscillating circuit.

It is respectfully submitled that there

is no motivation provided by Enriquez to modify Enriquez. **[column 3, lines 4-9, "... readily incorporated ..."]**

The Office Action cites col. 1, 11. 7-27 as describing the benefits of the invention.

The cited portion is the ûeld of the invention, and the background of the invention. In the

summary of the invention, where **[some]** benefits of the invention **[selected for various reasons]** are more conventionally located, the benetks of the invention are described as relating directly to meeting the reduced power supply parameters of the SLIC. **[The field and background of the invention are communication systems having a demanding set of performance requirements, and the invention correspondingly is a communication system having a demanding set of performance requirements. A design meeting the requirements thus provides the benefit of the requirements.]**

Accordingly it is respectfully submitted that one of ordinary skill in the art would not have been motivated to modify Emiquez, because' Emiquez does not provide teaching, motivation, or suggestion to modify itself, and there is no teaching, motivation, or suggestion in the art or othemise within the knowledge of one of ordinary skill in the art to modify Emiquez. **[see examiner comments above]**

Claims 1-32 were rejected under 35 U.S.C. 103(a) as being unpatentable over Emiquez in view of Kostelnik. The Oftsce Action state that Emiquez teaches all of the elements of claims, but does not specify that the current mirror has a bandgap reference SotIrce.

The arguments above **[see examiner comments above]** regarding the deficiencies of Emiquez, and remaining deGciencies of a combination of O'Shaugnessy and Kostelnik are also applicable here, and are incomorated by reference, except for those that relate specitkally to the motivation to combine O'Shaugnessy and Kostelnik. One of ordinary skill in the art

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would not combine Enriquez and Kostelnik for reasons different from the reasons for which one of ordinary skill in the art would not combine O'Shaugnessy and Kostelnik.

One of ordinary skill would not combine Emiquez

and Kostelnik because

Kostelnik's way of supplying reference voltage is incompatible with Enriquez.

Enriquez

specifies a different

way of supplying a reference voltage, using voltage division by

means of resistor 15. Enriquez insists

on reducing complexity (col. 2, 11. 23-24) and

realizing a highly integrated design (col. 2. 11. 22-23) as well as

implementing this design

by the use of çta relatively simple resistor-capacitor (RC) filter circuit."

Accordingly,

Enriquez is fundamentally opposed to a design that would substitute a

complex, non-

integrated voltage reference source that

is implemented by something other than a

one of ordinary skill in the art would not find

relatively simple RC circuit. Thus,

teaching, suggestion, or motivation to combine the references.

Dependent Claims <<<<<<<<<<<<<<<<<<

Although the discussion above has primarily been directed to the recitations of the
independent claims, it is respectfully noted that the dependent claims contain all the the
limitations of their corresponding independent claim, as well as additional limitations.
Thus, the dependent claims are patentable for at least the reasons the independent claims
are patentable, and
may be patentable for additional reasons, based on the additional limitations they include.

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New Claims <<<<<<<<<<<<<<<<<

Claims 33-38 have been added to more particularly point out and distinctly claim
the invention. It is respectfully submitted that the prior art of record does not teach or
suggest the combination of all of the elements of each of the claims.
In particular, with regard to claim 38, none of the cited references include a filter,
configured to filter a substantial amount of noise in a bias current.

Similarly, with regard

to claim 36, none of the cited references include a current source for an

oscillating circuit,

wherein the current source comprises a predetermined capacitance.

Conclusion <<<<<<<<<<<<<<<<<<<<

Accordingly, it is respectfully submitted that each of claims 1-38 recite

subject

matter that is neither disclosed nor suggested in the cited prior art. It is

therefore

respectfully requested that all of claims 1-38 be timely considered and

allowed in view of

the above amendments and arguments.

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In the event this paper is not being timely filed, the applicant respectfully

petitions

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for an appropriate extension of time. Any fees for such an extension

together with any

additional fees may be charged to Counsel's Deposit Account 50-2222.

Respectfully submitted,

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Additional Claim Fee Transmittal

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1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-10, 12-14, 16-32 are again rejected and claims 35 –38 are rejected under 35 U.S.C. 102(b.) as being clearly anticipated by O'Shaughnessy.

O'Shaughnessy disclosed a noise reduction circuit (Fig. 3, see examiner comments above) comprising a filter (380, see the examiner comments above) coupled to a gate of a current source (310) for an oscillating circuit (Column 1, lines 33-35, where at least the balanced modulators had oscillators, and oscillators were clearly included in this association because they employed current mirrors. Also, see the examiner comments above, all circuits are "oscillating circuits") to filter a bias (318 and alternatively bias line 340 noise components since bias for transistors 320 is supplied over this line. Any noise on the bias line is a bias noise.) noise component into the gate, and a degeneration circuit (326A, 326B) coupled to a supply for the current source (RVDD), wherein the degradation circuit reduces a gain within the current source (column 5, lines 16-19); ... resistance ... (all circuit

elements comprise resistance); ... capacitance ... (380); ... diode ... (column 4, lines 50-51); ... p-channel MOS ... (column 1, line 50 and Figs. 1 and 3); ... low pass filter ... (Fig. 3, 380 is parallel connected to the current mirror node 340); ... filter is coupled to a current mirror ... (Fig. 3, 380 and 340); ... to generate a bias current comprising the bias noise component ... (it inputs and outputs the same signal as Applicants' filter); ... degeneration circuit reduces a supply noise component ... (it inputs and outputs the same signal as Applicants' degeneration circuit); ... noise ... (A known circuit may not be patented by virtue of previously unstated characteristics, and Applicants' circuit does not include materially new features to the known circuit. And it is presumed that the known circuit had the characteristics which Applicant mentions). Regarding claims 35, the "diode" is the current mirror transistor 310. Regarding claims 36 and 37, the "capacitance" referred to is presumed to be inherent in O'Shaughnessy transistors 320, as it is in Applicant's transistor 224. Regarding claim 38, see the examiner comments above.

3. **Claims 33-35 are rejected under 35 U.S.C. 112**, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. The claims are indefinite since:

In claims 33-35, "a bias current source for supplying bias current" is misdescriptive since the current that a transistor supplies is along its source-drain path, and transistor 228 is supplying bandgap reference 226 and, negligibly, transistor 224 gate; i.e. the "bias current source" 228 supplies a current but it is not just the bias current, rather it includes the bias current as a component.

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. Claims 1-14 and 16-32 are again rejected and claims 33-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over O'Shaughnessy in view of Kostelnik et al.

O'Shaughnessy disclosed that said above, but did not say specifically what provided the current at the source of input current (318, Fig. 3). The art is replete with current mirrors, wherever they are employed, having all sorts of stable reference current sources, and for example Kostelnik et al disclosed that band gap bias circuits were known for this purpose; see column 9, lines 1-3. It would have been obvious to one of ordinary skill in the art to have incorporated a band gap circuit in the 0'Shaughnessy current mirror to source the input current as disclosed by Kostelnik et al and "motivated" to provide a stable bias for the current mirror as required for stable oscillator operation. Regarding claims 33-34, it is presumed that the "bandgap reference" disclosed by Applicant is one that provides a stable current to transistor 228 for it to follow as was done with current mirrors, and so the "bandgap reference" of Kostelnik et al is "coupled to" and "directly coupled to" the gate of M1 because it includes M6; i.e. M6 is a reference current source stabilized by a bandgap reference voltage and is thus a bandgap reference current source.

7. Claims 1-10 and 12-32 are again rejected and claims 35-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over O'Shaughnessy in view of Duncan et al.

O'Shaughnessy disclosed that said above, but did not show a resistor in the low pass filter. Duncan et al disclosed a noise reduction circuit (Figure 45i, 4524 and 4531) comprising a filter coupled to a gate of a current source for an oscillating circuit to filter a bias noise component into a the gate (column 71, lines 11-16). It would have been obvious to one of ordinary skill in the art to have incorporated a resistor in the O'Shaughnessy LPF as disclosed by Duncan et al and "motivated" to provide filter characteristics given by LPF resistors as required by the noise environment.

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claims 1-4, 6-10, 12-17 and 19-32 are again rejected and claims 35-38 are rejected under 35 U.S.C. 102(a.) as being clearly anticipated by Enriquez.

Enriquez disclosed a noise reduction circuit (column 1, lines 12 and 25) comprising a filter (column 2, lines 53-58) coupled to a gate of a current source (Column 3, lines 32-34 where "transistors" are claimed in general.) for an oscillating circuit (Column 1, lines 8-9 "communication systems and components" where oscillators are communications system components that use current mirrors. Also see the examiner comments above.) to filter a bias noise component into the gate (Column 3, lines 40-46 where the output current depends on the filtered gate voltage. Also see the examiner comments above.) and a degeneration circuit (Fig. 2, "24" The art being replete with current mirror circuits having emitter/source degeneration means such that they are readily identifiable to one of ordinary skill in the art.) coupled to a supply for the current source (VCC) wherein the degeneration circuit reduces a gain within the current source (degeneration); ... resistance ... (40); ... capacitance ... (42); ... diode ... (11); ... degeneration circuit comprises a resistance ... (24); ... LPF ... (Title); ... supply noise ... (Known function of degeneration means, and necessarily the case.). Regarding claims 35, the "diode" is the current mirror transistor 10. Regarding claims 36 and 37, the "capacitance" referred to is presumed to be inherent in Enriquez transistors 20, as it is in Applicant's transistor 224. Regarding claim 38, see the examiner comments above.

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

11. Claims 1-10 and 12-32 are again alternatively rejected and claims 35-38 are alternatively rejected under 35 U.S.C. 103(a) as being unpatentable over Enriquez.

Enriquez disclosed that said above where it is construed that when the background specifies the setting for the teachings of the invention as being communication system components, it is suggested that communication system components able to incorporate the invention, and known to one of ordinary skill in the art, like the oscillators, should incorporate the invention, "motivated" to provide the benefits of the invention which were at least as

said in column 1, lines 7-27. Also see the examiner comments above. And it is also construed where the claims in the Enriquez patent are generally to all transistors – PMOS were intended to be covered. It would have been obvious to one of ordinary skill in the art to have applied equivalent circuit transformation to other transistor varieties given the suggestion by Enriquez, and ordinary skill in the art and "motivated" to provide stable oscillator current mirror circuits.

12. The rejection of claims 1-32 over Enriquez in view of Kostelnik et al is dropped since a bandgap reference at the current mirror input of the Enriquez circuit would not correspond to filtering the input signal.

13. Applicant should change "oscillating circuit" in all the claims to –oscillator circuit—for allowability over the art.

14. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a

first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David Mis whose telephone number is (571) 272-1765. The examiner can normally be reached on Monday through Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Pascal can be reached on (571) 272-1769. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

David Mis
Primary Examiner
Art Unit 2817